the plate with another. Later I got some fairly good results in articulation by using a small diaphragm with all the conditions as nearly right as possible; and, having a current of sufficient electro-motive force, I could actually understand words produced on the end of my finger.

President ROWLAND. — What is the difference between that and Edison's motorphone?

Mr. GRAY. — In Edison's motorphone, when the current was thrown on, there was a decrease of friction; there was chemical action taking place on the surface. In this case there is none, and there is an increase of friction when the current is on: perhaps 'current' is a bad word to use.

President ROWLAND. — The principle is the same.

Mr. GRAY. — One is a chemical action, which causes the friction to be less at the moment of charge. In this case, however, this is purely static contact, and increases the friction in the same manner that the plates are thrown together when they are charged in this telephone. And the motion, of course, or sound, is produced by a letting-go of the finger from the plate, and not by actual vibration, in the same sense that it takes place between the two plates in this receiver of Professor Dolbear.

President ROWLAND. — You attribute it to attraction?

Mr. GRAY. — Yes: my experiments seem to prove that; I presume, because there was adhesion, there was an increase of friction during the time of the charge and the letting-go, when the circuit was open. There was really no circuit except when the charge was taken off.

Sec. F. E. NIPHER. — In regard to the case of which Professor Dolbear spoke, when it might be supposed that electricity does actually pass from the line into the ground, it seems to me that that fact, so far as it did exist, would be prejudicial to the action of the instruments; that what we want to bring about is not a current, but as great a difference of potential as possible, between the plates.

List of other papers.

The following additional paper was read in this section: — An extension of the theorem of the virial to rotary oscillation, by *H. T. Eddy*.

PROCEEDINGS OF SECTION C. — CHEMISTRY.

Report of the committee on indexing the literature of chemical elements.

THE undersigned, a committee appointed at the Montreal meeting of the American association for the advancement of science, "to devise and inaugurate a plan for the proper indexing of the literature of the chemical elements," respectfully submit the following report.

The members have conferred with each other orally and by correspondence. Several plans have been suggested, and their merits discussed. Three methods of collecting material for the indexes may be named: —

1°. Revising the Catalogue of scientific papers published by the Royal Society (8 vols. 4to).

2°. Indexing special journals by different individuals, and collating the matter.

3°. The independent plan, whereby each chemist indexes all the journals available to him with reference to a given element, in which he is presumably especially interested.

Each of these schemes is open to objections, and has its difficulties. The first would necessitate an enormous amount of clerical labor, for which volunteers would scarcely be secured; besides, data previous to 1800 could not be obtained from this catalogue.

The second involves, also, securing a large number of self-sacrificing volunteers; and both plans would require a vast amount of editorial work on the part of this committee.

The third plan seems, to a majority of the committee, the only feasible one at present. On the independent plan, seven indexes have already been compiled. The best arrangement of material has also been considered; and here again a threefold problem occurs: —

1. Chronologically.
2. Alphabetically, by authors.
3. Topically.

The committee do not venture to dictate to independent workers, but recommend the chronological arrangement, with the understanding that a topical index accompany each monograph.

The best channel of publication has also been considered by the committee. All the indexes hitherto published have been printed in the annals of the New-York academy of sciences; and the academy has generously offered, through its officers, to continue its good work. The Smithsonian institution further agrees to distribute, free of expense, all circulars and documents in furtherance of this undertaking; an offer which is of greatest importance, and for which this committee expresses sincere thanks.

Since the appointment of the committee, Mr. Webb's index to the literature of electrolysis has been published in the annals of the New-York academy of sciences; and several chemists have expressed a willingness to co-operate in the proposed undertaking. Prof. R. B. Warder of Cincinnati has promised an index to the literature of the velocity of chemical reactions; and Dr. Henry Leffmann of Philadelphia proposes to index the important element arsenic.

Your committee present to the association this brief report of progress, and respectfully desire to be continued.

H. C. BOLTON, *Chairman;* IRA REMSEN; F. W. CLARKE; A. R. LEEDS; A. A. JULIEN.